

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
18 August 2005 (18.08.2005)

PCT

(10) International Publication Number  
**WO 2005/075386 A2**

(51) International Patent Classification<sup>7</sup>: **C07C 1/00**

(21) International Application Number:  
PCT/TB2005/050449

(22) International Filing Date: 3 February 2005 (03.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
10/542,088 5 February 2004 (05.02.2004) US

(71) Applicant (for all designated States except US):  
**SASOL TECHNOLOGY (PROPRIETARY) LIMITED** [ZA/ZA]; 1 Sturdee Avenue, Rosebank, 2196 JOHANNESBURG (ZA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **STEYNBERG, André, Peter** [ZA/ZA]; 3 Orange River Street, SE4, 1911 VANDERBULPARK (ZA). **GREEFF, Pierre** [ZA/ZA]; 108 6th Street, Linden, 2195 JOHANNESBURG (ZA).

(74) Agent: **VAN DER WALT, Louis, Stephanus**; Adams & Adams, Adams & Adams, Place, 1140 Prospect Street, Hatfield, PO, Box 1014, 0001 PRETORIA (ZA).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

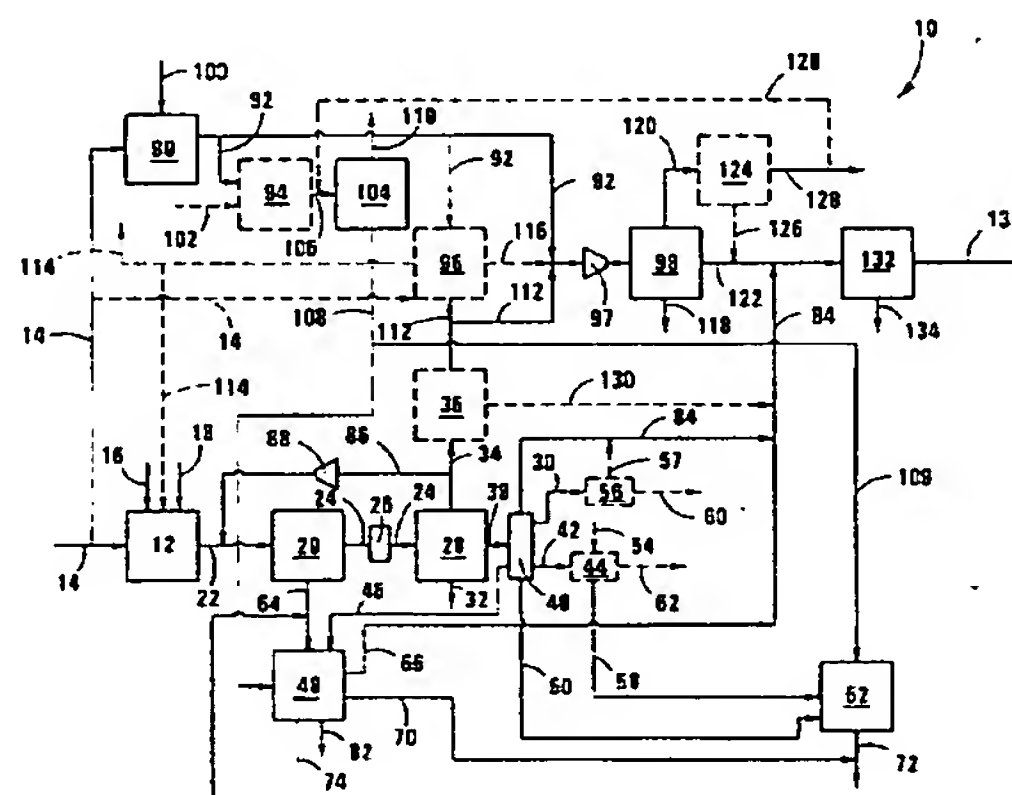
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

[Continued on next page]

(54) Title: CO-PRODUCTION OF HYDROCARBONS AND DIMETHYL ETHER



$$SN = \frac{[H_2] + [CO]}{[CO_2] + [CO]} \quad (I)$$

(57) Abstract: A process for co-producing hydrocarbons and dimethyl ether (DME) includes feeding a gaseous feedstock comprising hydrogen and carbon monoxide, into a threephase low temperature catalytic Fischer-Tropsch reaction stage, allowing the hydrogen and carbon monoxide partially to react catalytically in the Fischer-Tropsch reaction stage to form hydrocarbons, and obtaining a tail gas from the Fischer-Tropsch reaction stage which includes unreacted hydrogen and carbon monoxide and also carbon dioxide. The composition of at least a portion of the tail gas is adjusted to provide a DME synthesis feedstock with a syngas number (SN) between 1.8 and 2.2, where formula (I) and where  $[H_2]$ ,  $[CO]$  and  $[CO_2]$  respectively are the molar proportions of hydrogen, carbon monoxide and carbon dioxide in the DME synthesis feedstock. The DME synthesis feedstock is fed into a DME synthesis stage for conversion.

BEST AVAILABLE COPY



---

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*